

Notice of Allowability

Application No.

09/660,635

Examiner

James S. Wozniak

Applicant(s)

HIGGINS ET AL.

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/3/2005.
2. ☒ The allowed claim(s) is/are 8,9,11 and 15-18.
3. ☒ The drawings filed on 14 October 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

Response to Amendment

1. In response to the office action from 3/3/2005, the applicant has submitted an amendment, filed 4/28/2005, amending claims 8, 9, 11, and 15-18, while canceling claims 6, 7; 10, and 12-14 and arguing to traverse the art rejection based on the limitation regarding ordering a first and second sequence of spoken words for speaker verification, wherein the words are spoken digits between the numbers 1 and 9 and also a bridging word "ti" (*Amendment, Page 5*). Applicant's arguments have been fully considered and claims 8-9, 11, and 15-18 are allowable over the prior art of record for the reasons noted by the applicant and those given below.
2. Based on the cancellation of claim 12, the examiner has withdrawn the previous objections directed towards an improper dependent claim.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jack Jankovitz on 5/25/2005.

4. The application has been amended as follows:

In **claim 17**, line 1 change "the method according to Claim 18" to --the method according to claim 16--.

5. Cancel **Claims 1-5** as being drawn to a non-elected invention.

Allowable Subject Matter

6. **Claims 8-9, 11, and 15-18** are allowable over the prior art of record.

7. The following is an examiner's statement of reasons for allowance:

With respect to **Claim 18**, the prior art of record fails to explicitly teach or fairly suggest a method for verifying a speaker's identity by forming enrollment speech data as a plurality of numerical pair phrases in a spoken password using a set of words consisting of the numbers one through nine and a number bridging word "ti" (for example- four-"ti"-five) and comparing that data to a differently ordered set of test data that is formed using the same set of words. The prior art of record does not explicitly teach or specifically suggest the process of comparison wherein the enrollment and test speech data are converted into a set of adapted HMM models using a Baum-Welch algorithm, reordered into first and second numerical password sequences having

the same order and the same predetermined number of words, and compared using feature vectors of each sequence in a weighted Euclidean distance calculation in order to verify the identity of the speaker.

Although Häb-Umbach et al (*U.S. Patent: 5,873,061*) teaches a means of accepting a series of sub-word units and reordering that series of sub-word units in order to perform speech recognition (*Col. 5, Lines 51-56*), Häb-Umbach does not teach that the sub-word units are part of a numerical password consisting of numbers one through nine and a bridging word "ti" and the additional step of reordering both a first and second set of speech recognition units. Rather, Häb-Umbach teaches that a stored inventory of speech recognition models (enrollment data) is reordered to match a particular spoken sequence (test speech data). Thus, since only the training (enrollment) speech data taught by Häb-Umbach is reordered for speech recognition to match a particular input, Häb-Umbach does not teach the steps of reordering adapted HMM word models that have been converted using a Baum-Welch algorithm that correspond to test speech data representing a spoken numerical sequence.

While Vysotsky et al (*U.S. Patent: 5,832,063*) and Naito et al (*U.S. Patent: 5,983,178*) overcome some of the deficiencies of Häb-Umbach by teaching speaker verification and the interchangeability of words and sub-word units (Vysotsky) and the use of a Baum-Welch algorithm (Naito), neither reference teaches the aforementioned ordering process in speaker recognition. Thus, Claim 18 is allowable over the prior art of record.

The dependent claims further limit the allowable independent claim, and thus, are also allowable over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632 and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached at (571) 272-7582. The fax/phone number for the Technology Center 2600 where this application is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 306-0377.

James S. Wozniak
5/25/2005


DAVID L. OMETZ
PRIMARY EXAMINER